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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,830	07/21/2003	Glenn Ratificar	42P12684C	6572

8791 7590 06/06/2005

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EXAMINER	
EDMONDSON, LYNNE RENEE	
ART UNIT	**PAPER NUMBER**
1725	

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/624,830	RATIFICAR ET AL.	
	Examiner	Art Unit	
	Lynne Edmondson	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/6/05* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Casson et al. (USPN 5261593).

Casson teaches a mechanical joint comprising a bump and solder paste between a die and a substrate (figure 5A and col 9 lines 1-38). Although the structure of the joint is the same regardless of the type of reflow employed, it is noted that infrared energy was used (col 11 lines 54-67 and col 13 lines 28-40). A joint formed by vapor phase reflow has same structure and properties as a microwave reflow joint.

3. Claims 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sweitzer (USPN 5615477).

Sweitzer teaches a mechanical joint comprising a bump and solder between a die and a substrate exposed to infrared radiation (col 5 lines 7-43 and col 7 line 55 – col 8 line 12). However it is noted that the structure of the joint is the same regardless of

the type of reflow employed. A joint formed by convection reflow has same structure and properties as a microwave reflow joint.

4. Claims 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Koopman et al. (USPN 5992729).

Koopman teaches a mechanical joint comprising a bump on a die (col 6 line 66 – col 7 line 18) and solder on a substrate (figure 5A and col 9 lines 1-38), exposed to microwave energy and reflowed with radiant energy. However it is noted that the structure of the joint is the same regardless of the type of reflow employed. A joint formed by convection reflow has same structure and properties as a microwave reflow joint.

5. Claims 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Lin (USPN 6548393 B1).

Lin teaches a mechanical joint comprising a Cu bump (132, col 8 line 28 – col 10 line 5 and figure 4J) and solder (154) between a die and a substrate (panel, col 10 lines 56-64 or circuit board, col 11 lines 1-9), exposed to microwave energy and reflowed with radiant energy (col 10 lines 10-49). However it is noted that the structure of the joint is the same regardless of the type of reflow employed. A joint formed by convection reflow has same structure and properties as a microwave reflow joint.

Response to Arguments

6. Regarding applicant's argument that the Casson joint was formed by direct heating rather than indirect heating and is not self-aligned, it is noted that the identical final structure (an aligned connection between a die and substrate comprising solder and Cu) is formed. There is no indication that the disclosed method produces unexpected results. An identical structure can be formed by convection or hot gas reflow.

Therefore the 102 rejection of claims 14-17 as anticipated by Casson stands.

7. Regarding applicant's argument that the Sweitzer joint was formed by direct heating rather than indirect heating and is not self-aligned, it is noted that the identical final structure (an aligned connection between a die and substrate comprising solder and Cu) is formed. There is no indication that the disclosed method produces unexpected results. An identical structure can be formed by convection or hot gas reflow.

Therefore the 102 rejection of claims 14-17 as anticipated by Sweitzer stands.

8. Regarding applicant's argument that the Koopman rejection is based on a patent with the same number as Sweitzer, this is a typographical error. Therefore the rejection will be restated and not made final.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bernardoni et al. (USPN 5172852, obvious microwave reflow variations, IR, convective, conductive, hot bar, etc.).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (571) 272-1172. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson
Primary Examiner
Art Unit 1725

LRE
May 25, 2005

LYNNE R. EDMONDSON
PRIMARY EXAMINER

5/24/05